

WHAT IS CLAIMED IS:

1 ~~1.~~ A method for arbitrating use of a network medium to avoid collisions caused
2 by multiple nodes attempting to transmit data on the network medium at the same time, said
3 method comprising the steps of:

4 listening to a network medium to determine if said medium is active or
5 inactive;

6 establishing an active network server if said medium is inactive; and

7 using centralized token passing for access to a said medium/when said medium
8 is active, said centralized token passing controlled by said active network server.

1 2. The method of Claim 1, wherein said active network server maintains a lineup
2 card that lists one or more active client nodes.

3 3. The method of Claim 1, wherein said active network server passes a token to a
4 selected client node, said selected client node being one of said one or more active client
5 nodes listed on said lineup card.

6 4. The method of Claim 3, wherein said selected node is allowed to transmit data
7 on said network medium only when said selected node has said token.

8 5. The method of Claim 3, wherein said selected node is removed from said
9 lineup card when said node has been inactive for a period of time.

10 6. The method of Claim 3, wherein a new client node requests insertion on said
11 lineup card by using spitting on the bus algorithm.

12 7. The method of Claim 1, wherein a presence of said datagram is detected by
13 matching a specified preamble and length sequence.

14 8. The method of Claim 1, wherein access to said medium is provided by a
15 media access control layer.

16 9. The method of Claim 8, wherein said media access control layer provides
17 control structures to implement a spare receive buffer large enough to hold a Media Access
18 Control Header.

1 10. The method of Claim 9, further comprising the step of sending a BUSY
2 response from a receiving node to a transmitting node when said receiving node is swamped
3 with previous packet requests.

1 11. The method of Claim 1, further comprising the step of issuing an auto-
2 announce packet when a new node enters the network.

1 12. The method of Claim 1, wherein a preferred server node becomes said active
2 server node in response to a wake-up algorithm.

1 13. A hybrid client/server and peer-to-peer networking architecture to provide
2 central control of a network medium, with distributed accessibility of said network medium,
3 said architecture comprising:

4 an active server node; and

5 at least one client node, said active server node configured to provide a token to said at
6 least one client node, said at least one client node configured to transmit on said medium for
7 no more than a specified time period before returning said token to said active server node.

1 14. The hybrid client/server and peer-to-peer networking architecture of Claim 13,
2 wherein said active server node maintains a lineup card of active client nodes.

1 15. The hybrid client/server and peer-to-peer networking architecture of Claim 13,
2 wherein said active server node relinquishes the role of active server when the active server
3 node, and all client nodes, have become inactive.

1 16. A method for dynamic arbitration of access to a network medium, wherein said
2 dynamic arbitration is based on activity of network nodes attached to said medium, said
3 method comprising the steps of:

4 using a first network node to attempt to wake-up a preferred server node, said
5 first network node attempting to wake-up said preferred server node when said first
6 network node has data to transmit on said medium and said medium is inactive;

7 assigning a role of active network server to said preferred server if said
8 preferred server wakes up; and

9 assigning said role of active network server to said first network node if said
10 preferred server node fails to wake-up.

1 17. A data network comprising:

2 a network medium;
 3 active server means for maintaining a list of active client nodes and arbitrating
 4 access to said medium, said active server means providing a token;
 5 client node means for receiving said token from said active server means.

1 18. The data network of Claim 17, wherein said client node means comprises a
 2 smart node.

1 19. The data network of Claim 17, wherein said client node means comprises a
 2 dumb node.

1 20. The data network of Claim 17, wherein said client node means becomes an
 2 active client node by spitting on the bus.

1 21. The data network of Claim 17, wherein said network medium is a power line.

1 22. The data network of Claim 17, wherein said list of active client nodes
 2 comprises a lineup card.

1 23. The data network of Claim 17, wherein each of said active nodes in said list of
 2 active nodes are prioritized based on a type of data carried by each node.

1 24. The data network of Claim 23, wherein said list of nodes allows for a
 2 maximum number of nodes to be listed, said list configured to remove a first node that
 3 communicates data having a relatively lower priority in order to make room for a second node
 4 that carries data having a relatively higher priority.

1 25. A network node coupled to a network, said node comprising:
 2 a processor;
 3 a memory operatively coupled to said processor; and
 4 a protocol program loaded in said memory, said program configured to:
 5 announce a presence of said node on said network;
 6 request access to a network medium;
 7 receive a token from a server node;
 8 hold said token;
 9 transmit data on said network while holding said token; and
 10 return said token to said server node within a specified period of time.

1 26. The network node of Claim 25, wherein said network medium is a power line
2 medium and said network node provides streaming data across said power line medium.

1 27. The network node of Claim 26, wherein said multimedia data comprises voice
2 data.